Claims

1) Nucleic acid sequence encoding a *Lawsonia intracellularis* protein or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 70 % homology with the nucleic acid sequence as depicted in SEQ ID NO: 1.

Sub Q1

2) Nucleic acid sequence or part thereof according to claim 1, characterised in that the sequence has at least 80 %, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence as depicted in SEQ ID NO: 1

3) Nucleic acid sequence encoding a *Lawsonia intracellularis* protein or a part of said nucleic acid sequence that encodes an immunogenic fragment of said protein, said nucleic acid sequence or said part thereof having at least 70 % homology with the nucleic acid sequence as depicted in SEQ ID NO: 3.

Sub Q2

4) Nucleic acid sequence or part thereof according to claim 1, characterised in that the sequence has at least 80 %, preferably 90 %, more preferably 95 % homology with the nucleic acid sequence as depicted in SEQ ID NO: 3.

5) DNA fragment comprising a nucleic acid sequence according to claims 1-4.

6) Recombinant DNA molecule comprising a nucleic acid sequence according to claims 1-4 or a DNA fragment according to claim 5, under the control of a functionally linked promoter.

Sub Q3

7) Live recombinant carrier comprising a DNA fragment according to claim 5 or a recombinant DNA molecule according to claim 6.

8) Host cell comprising a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6 or a live recombinant carrier according to claim 7.

9) *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 70 % homologous to the amino acid sequence as depicted in SEQ ID NO: 2 or an immunogenic fragment of said protein.

10) *Lawsonia intracellularis* protein according to claim 9, having a sequence homology of at least 80 %, preferably 90 %, more preferably 95 % homology to the amino acid sequence as depicted in SEQ ID NO: 2, or an immunogenic fragment of said protein.

11) *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 70 % homologous to the amino acid sequence as depicted in SEQ ID NO: 4 or an immunogenic fragment of said protein.

12) *Lawsonia intracellularis* protein according to claim 11, having a sequence homology of at least 80 %, preferably 90 %, more preferably 95 % homology to the amino acid sequence as depicted in SEQ ID NO: 4, or an immunogenic fragment of said protein.

13) *Lawsonia intracellularis* Outer Membrane Protein having a molecular weight of 19/21 kD, said Outer Membrane Protein being obtainable by a process comprising the steps of

a) subjecting an outer membrane preparation to SDS-PAGE

b) excision of the 19 or 21 kD band from the gel

or an immunogenic fragment of said protein.

14) *Lawsonia intracellularis* protein according to claim 13, characterised in that said protein has an N-terminal amino acid sequence that is at least 70 % homologous to the amino acid sequence as depicted in SEQ ID NO: 5, an internal amino acid sequence that is at least 70 % homologous to the amino acid sequence as depicted in SEQ ID NO: 6 or

an internal amino acid sequence that is at least 70 % homologous to the amino acid sequence as depicted in SEQ ID NO: 7, or an immunogenic fragment of said protein.

15) *Lawsonia intracellularis* protein according to claim 14, having a sequence homology of at least 80 %, preferably 90 %, more preferably 95 % homology to the amino acid sequence as depicted in SEQ ID NO: 5, 6 or 7, or an immunogenic fragment of said protein.

16) *Lawsonia intracellularis* protein according to claims 9-15 for use in a vaccine.

17) Use of a *Lawsonia intracellularis* protein according to claims 9-15 for the manufacturing of a vaccine for combating *Lawsonia intracellularis* infections.

18) Vaccine for combating *Lawsonia intracellularis* infections, characterised in that it comprises a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6, a live recombinant carrier according to claim 7, a host cell according to claim 8 or a protein according to claims 9-15, and a pharmaceutically acceptable carrier.

19) Vaccine according to claim 18, characterised in that it comprises an adjuvant.

20) Vaccine according to claim 18 or 19, characterised in that it comprises an additional antigen derived from a virus or micro-organism pathogenic to pigs or genetic information encoding said antigen.

21) Vaccine according to claim 20, characterised in that said virus or micro-organism pathogenic to pigs is selected from the group of Pseudorabies virus, Porcine influenza virus, Porcine parvo virus, Transmissible gastro-enteritis virus, Rotavirus, *Escherichia coli, Erysipelo rhusiopathiae, Bordetella bronchiseptica, Salmonella cholerasuis, Haemophilus parasuis, Pasteurella multocida, Streptococcus suis, Mycoplasma*

hyopneumoniae and *Actinobacillus pleuropneumoniae.*

22) Vaccine for combating *Lawsonia intracellularis* infections, characterised in that it comprises antibodies against a protein according to claims 9-15.

23) Method for the preparation of a vaccine according to claims 18-21, said method comprising the admixing of a nucleic acid sequence according to claims 1-4, a DNA fragment according to claim 5, a recombinant DNA molecule according to claim 6, a live recombinant carrier according to claim 7, a host cell according to claim 8 or a protein according to claims 9-15 and a pharmaceutically acceptable carrier.

24) Method for the preparation of a vaccine according to claim 22, said method comprising the admixing of said antibodies and a pharmaceutically acceptable carrier.

25) Diagnostic test for the detection of *Lawsonia intracellularis* specific DNA characterised in that the test comprises a nucleic acid sequence according to claims 1-4, or a fragment thereof having a length of at least 12, preferably 15, more preferably 18 nucleotides.

26) Diagnostic test for the detection of antibodies against *Lawsonia intracellularis*, characterised in that said test comprises a protein or a fragment thereof as defined in claims 9-15.

27) Diagnostic test for the detection of antigenic material of *Lawsonia intracellularis*, characterised in that said test comprises antibodies against a protein or a fragment thereof as defined in claims 9-15.